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*L. A second Account of the new Method of opening the Cornea, for taking away the Cataract; by Samuel Sharp, Surgeon to Guy's Hospital, and F. R. S.*

Read Nov. 22, 1753. **I** HAD the honour, last April, to lay before the Society a new method of opening the cornea, in order to take away the cataract; being intended as an improvement on Monsieur Daviel's manner of doing that operation: and having now practised it on several subjects, I here take the liberty to give a short account of the success, with a few observations on the principal phænomena attending this operation; to which I shall add a description of a farther improvement of the operation itself. For a fuller view of the history of these cases, I have here set down the ages of the patients, the dates of the days on which they underwent the operation, and the particular circumstance of its being done on one or both eyes.

Names.	Age.	Date.	Eyes.
<i>A B</i>	55	April 7	1
<i>A C</i>	54	April 16	2
<i>A D</i>	70	May 12	2
<i>A E</i>	65	June 6	2
<i>A F</i>	65	July 16	2
<i>A G</i>	63	August 8	2
<i>A H</i>	48	Sept. 19	2
<i>A I</i>	64	Sept. 19	1
<i>A K</i>	67	Sept. 19	2
<i>A L</i>	58	Oct. 4	2
<i>A M</i>	47	Oct. 22	1
			From

From this catalogue it appears, that the operation has been performed on nineteen eyes; and, from the most exact information, which I have been able to procure, the state of the success stands thus:

*AC, AD, AF, AG, AL*, all which had the operation performed on both eyes, have every one of them recovered the sight of both eyes, to as great a perfection as can be supposed, without the help of the crystalline humour; that is, they can read and write, with proper spectacles.

The first of them, *AC*, has found so much benefit, as to be able to carry on the exercise of his profession, that of a surgeon.

*AH* sees with both eyes, but not so well as the other five. I have just now an account from the surgeon, who has attended her (in a distant country), that her eyes look well, and her sight improves\*.

*AI*, another patient, at a distance from London, had the operation done on one eye only; which he recover'd, as my correspondent informs me, so as to see tolerably well.

*AM*, on one eye only, with which he already sees very well.

*AE* had it performed on both; one of which was lost, and the other recovered; but continues inflamed, and cannot bear much light.

*AB* had it done on one eye only, which was lost.

S f 2

Both

\* Some weeks after this paper was read, Mr. Sharp received an account, that the pupils of both eyes had lately contracted so much, as hardly to leave room for the admission of light; and it was apprehended the patient would soon become blind.

Both the eyes, in which the operation fail'd, were destroy'd by the subsequent inflammation : but, to do justice to this new operation, I might here take notice, with regard to the case of *AB*, that the ill success was partly owing to the imperfection of my instrument ; a disadvantage, that must frequently attend on the execution of new attempts. It was the first operation I performed, and I had provided a knife with so thin a blade, that, after I had passed through the cornea into the anterior chamber of the eye, the point was so blunted, that, upon endeavouring to carry it through the cornea out on the other side, the blade bent, and I was apprehensive it might break : however, withdrawing it a little, I made two or three efforts, and succeeded in the incision, and the removal of the cataract.

During this operation, the aqueous humour being discharged, and the patient struggling, I wounded the iris ; which bled profusely, and continued for several days to discharge a great quantity of blood, and bloody ichor : and it is to this accident that I am inclined to impute the miscarriage of the operation ; though Mr. Daviel affirms, that the wounds of the iris have been very seldom followed with bad effects in his practice.

I have reserved the mention of *A K*'s history to the last, because of its singularity. She was altogether as blind as those, whose cataracts are ripe ; but hers had the appearance of a beginning cataract, being of a light blue, and but little opaque. Upon making the compression, the crystalline did not advance through the pupil, as in the other instances : and I found,

found, that, if I exerted more force, I should soon evacuate all the vitreous humour. It was evident, by the great distance of the cataract behind the iris, that this disappointment did not arise from an adhesion to the iris: however, I had immediately recourse to the experiment of cutting through the capsula with the point of my knife; hoping, by that means, to have set free the crystalline, but it gave me no assistance. I then passed the *curette* (a little scoop) through the pupil, and turn'd it several times round, in expectation of breaking the capsula; but found not the least resistance to my instruments; so that both operations proved ineffectual; the circumstances being exactly the same in each eye.

I have, in couching, met with cataracts of this nature; but I had no apprehension that I could not have discharged, by the wound of the cornea, the matter of a cataract, in however fluid a state it might prove.

Of all the 19 there was not one, that escaped an inflammation; whereas, after couching, there are great numbers, who have neither inflammation nor pain. But it is to be remarked, that, notwithstanding the violent inflammation, which sometimes ensues after the incision of the cornea, even to an enlargement of the eyelids, and vesication of the *tunica conjunctiva*, the patient complains rather of a tenderness of the eye, upon touching it, than of pain; being generally exempt from those dreadful dartings in the head, which, for the most part, accompany an inflammation after couching. And I believe I may assert, that none suffer'd very much in that particular, except

cept *A E*; who was extremely bad, and lost the eye on that side, where the pain was.

I presume it will not be difficult to conceive, how it should happen, that these inflammations should excite such different symptoms, when we reflect, that, in the incision of the cornea, the cornea only suffers; and in couching, the *conjunctiva*, the *sclerotica*, the *choroides*, and the *tunica retina*, are punctured; most of which organs are either tendinous or nervous; and every surgeon knows the painfulness and obstinacy of inflammations, when they follow upon wounds and punctures of tendinous or nervous parts.

I have not mentioned, in this comparison, the violence done to the vitreous humour; because I believe it does not occasion the subsequent pain; and because it seems to be often as much or more injured in the new operation, without any notable inconvenience.

It has not occur'd in any of these cases, that the inflammation has been so slight, as to disappear entirely in a fortnight, or three weeks; most of them requiring six weeks, and some longer, for the total removal of them. The first ten days, or more, the light is generally very offensive; and I have observ'd, in three or four instances, that, upon forcibly opening the eyelids during that time, the patient was only sensible of a glare of light, though the eye then appeared clear, and he afterwards recover'd his sight. Which I mention, to obviate the melancholy prognostic one would be disposed to make upon a first examination. However, this is not to be understood as a constant fact; some patients distinguishing objects immediately from the time of the operation.

It

It sometimes happens, after this operation, that the pupil loses its circular figure: which, I imagine, is owing to the great tenderness of the iris, that, upon the least violence, is subject to be ruptured; and, I suppose, in this operation, a slight pressure from the back or the flat of the blade may have produced the accident in the instances alluded to. Possibly the sudden dilatation of the pupil, from the rapid passage of the cataract through it, may sometimes occasion it; but the following history would induce one rather to ascribe it to the cause, which I first mention'd.

Before I had thought of the knife for opening the cornea, I used the scissors, as Monsr. Daviel directs; and, in a certain patient, after I had made the wound of the cornea, and was going to compress the eye, for the expulsion of the cataract, I discover'd, that, from the disturbance I had given to the humours by the foregoing process, it was sunk almost as much as if it had depressed by a couching needle. I therefore left it in that situation, and the man afterwards saw very well; tho' the cataract remained visible something below the pupil.

Now, in this instance, the cataract had not passed thro' the pupil; and yet it was lacerated, so as to lose its circular form: but, whatever may be the cause, I do not find, that the accident itself proves prejudicial to the sight.

I shall finish these observations with a remark on one disadvantage, to which this operation and couching are incident; and that is a possibility of an incomplete *gutta serena* being complicated with the cataract. It has, indeed, been a rule with surgeons,

tho' the cataract appear fair, never to perform the operation, but when the patient is sensible of a glimmering of light; because a total privation of sight argues some other disorder of the eye. But the criterion is not infallible; for it may happen, that a *gutta serena* shall prevail to a degree, that does not take away the sense of light, and yet prevents the distinction of objects: So that when a cataract is thus circumstanced, the operation will be fruitless.

It remains now to speak of the operation itself. In my former paper, after having described the manner of making the incision, I directed the operator to compress the inferior part of the globe of the eye with his thumb gently, till the cataract should be expell'd through the incision of the cornea, upon the patient's cheek; and in this method I have perform'd it upon several subjects. But remarking, that tho', upon the evacuation of the aqueous humour, the crystalline readily advanced through the pupil into the anterior chamber, yet that it required some force to expel it from its membrane through the wound of the cornea, and in that action it sometimes suddenly drew after it a portion of the vitreous humour, I changed my method, and no longer press'd the eye, when once the crystalline was in the anterior chamber, but immediately stuck the point of my knife into the body of it, and extracted it contained in its capsula, without spilling any of the vitreous humour.

This new process, I suppose, will be found of considerable advantage, as it will, in a great measure, remove the danger of evacuating the whole, or too much, of the vitreous humour: though it may be observed, to the praise of this operation, that, contrary

trary to expectation, a large quantity of this humour (perhaps a third part, or more) has been sometimes discharged, without any bad consequence.

I have supposed, that the great and sole benefit arising from this improvement, is the easy separation of the crystalline from the bed of the vitreous humour, so that none of the vitreous humour shall be evacuated. But perhaps it will also be approved of, as it will render unnecessary the measure prescribed by Mons. Daviel, of wounding the membrane of the crystalline, before we proceed to the extraction of the crystalline itself: To which purpose he advises the flap of the cornea to be suspended with a small spatula; then, with a pointed cutting needle, to wound the surface of the crystalline; after which, to introduce the same spatula through the pupil, in order to detach the cataract from the iris, and then proceed to the expulsion.

I have here recited these processes of M. Daviel's operation, which are calculated merely to procure an easy operation of the crystalline from the vitreous humour: But they are difficult to the operator, fatiguing to the patient, and, I should hope, altogether needless, if the knife be used in the manner which I have recommended: For, whether the capsule of the crystalline be nothing more than the duplicature of the membrane of the vitreous humour, or whether it be a proper coat, which is also cover'd by the membrane of the vitreous humour; in either case, since by compression the chrySTALLINE advances with so much facility through the pupil, it will be easily seized by the knife, and removed from the vitreous humour, with its enveloping membrane:

T t

Whereas,

Whereas, in making an incision on the surface of the crystalline, and wounding its capsula, the crystalline will frequently slip out of the capsula, which will be left behind: And, in fact, this has happen'd to M. Daviel, who advises pincers, and other instruments, in order to extract the remaining membrane. However, I shall here observe, in regard to the capsula of the crystalline, that, should the humour slip out of it, before it be seized by the knife, it possibly will waste; for, in milky cataracts, when the fluid is discharged, the membrane, in length of time, wastes: Whole cataracts, with the enveloping membrane likewise, sometimes waste: And in one of my patients (*A. C.*) the crystalline, from the mere pressure in the operation, burst out of its capsula, which I left in the eye; but in some weeks it intirely wasted. However, if the removing of the capsula should, by future experience, be found necessary, it may be conveniently done by the *curette*; one of the instruments M. Daviel recommends upon that occasion. This instrument may be also used for the extraction of a cataract, which has been broken to pieces by the couching needle in a former operation, and for the removal of the capsula of bag-cataract, when the fluid only has been discharged, and the bag remains behind; but it will be most eminently useful in detaching the crystalline from the back part of the iris, when any portion of it happened to adhere: Which circumstance would render the operation fruitless, without such a precaution.

It has not happened, in any of the cases I have treated, that, either during the operation, or after the operation, the iris has been push'd forwards, or insinuated

insinuated itself through the wound of the cornea, forming a *staphyloma* ; but M. Daviel speaks of it as an occurrence he has met with, and says it may be easily replaced by the small spatula.

I presume a greater number of operations will prove this account very deficient : But I have here communicated all that I have done, and all that I know on the subject ; not having suppress'd one experiment, nor, to the best of my remembrance, one circumstance, either to the honour or disgrace of the operation.

It is to be hoped, that, when it shall be more generally practised, ingenious men will render it still more perfect : And I should not be surpris'd, if the use of a *speculum oculi* should hereafter be esteemed an improvement : But then it must be contriv'd so, as that it shall not compress the globe of the eye ; or, if it does, the operator must be careful to remove it in the instant the incision is making, lest, by continuing the pressure after the wound is made, all the humours should suddenly gush out.

It was impossible for me to make any remarks on this operation, without criticising on M. Daviel, as M. Daviel has not only the honour of having first practised it, but is the only writer who has treated the subject, at least that I am acquainted with. I therefore flatter myself, that this attempt to improve upon what he has laid down, will not be construed as a reflection on him, or his practice : For, however his invention may be perfected by others, in my opinion, it is still to him principally, that the world will be indebted for the benefit of the discovery.